DAVID L FINDLEY, Department of Pharmaceutical Science and Research, Marshall University School of Pharmacy, Huntington, WV, 25701 and MICHAEL D HAMBUCHEN, Department of Pharmaceutical Science and Research, Marshall University School of Pharmacy, Huntington, WV, 25701. Methamphetamine-induced Locomotor Activity and LD50 in Cockroaches.

Invertebrate animal studies of methamphetamine (METH) could allow for inexpensive, high throughput exploration of many variables that could be used to direct the design of future vertebrate pharmacology and toxicology studies. We hypothesized that METH would both increase locomotion compared to saline and produce dose-dependent lethality in male *Periplaneta americana* cockroaches.

LD50 was determined with 0-1780 mg/kg METH (n=15-16/group) using probit analysis. After the LD50 study, automated behavioral analysis software interfaced with overhead cameras was used to measure spontaneous locomotor activity in surviving cockroaches in an open field. In separate experiments, METH-induced locomotor activity was measured in an open field (0-560 mg/kg, n=8/group). A 1-way ANOVA with Holm-Sidak's multiple comparisons test was used for statistical comparisons in both locomotor studies.

The LD50 of METH was found to be 738 ± 151 mg/kg (almost 10-fold greater than the value in rats). There were significant decreases in spontaneous locomotor activity in surviving cockroaches after administration of 650 and 750 mg/kg METH ($P < .05$). While 100 mg/kg METH did not significantly increase METH locomotor activity relative to saline, the 300 mg/kg dose significantly increased this effect ($P < .05$), and the 560 mg/kg dose resulted in the cockroaches remaining in the supine position for the majority of the trial.

In conclusion, METH has pharmacological and toxicological effects in cockroaches, but they are less potent than in rodent models. Funding: Marshall University School of Pharmacy Faculty Research Seed Grant.